2825 G-000-1001.9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY DISCUSSION OF PUBLIC COMMENTS AND QUESTIONS FERNALD 1990 CONSENT AGREEMENT

14
ENCLOSURE

[redacted]

2825

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DISCUSSION OF PUBLIC-COMMENTS AND QUESTIONS
FERNALD 1990 CONSENT AGREEMENT

On September 20, 1991, the United States Environmental Protection Agency (U.S. EPA) and the United States Department of Energy (U.S. DOE) proposed to amend the 1990 Consent Agreement under CERCLA 120 and 106(a) for the Fernald Environmental Management Project in Fernald, Ohio (the 1990 Consent Agreement). The following comments and questions were submitted by the public during the October 1-31, 1991 comment period. After careful review, U.S. EPA has determined that the comments and questions submitted during this comment period do not require modification of the 1990 Consent Agreement and need not be published pursuant to the notice provisions of Section 117 of CERCLA. Copies of the comments and questions, along with U.S. EPA's responses, will be placed in the Administrative Record for the Fernald Site.

(1) **The term "protective of human health and the environment" is used often in the document; however, what one person feels would be protective is not what another would consider protective. Additionally, the document does not list the cleanup standards. (Partly because for some substances there are no established standards.)**

U.S. EPA RESPONSE:

U.S. EPA has an express statutory obligation to ensure that all remedial actions are protective of human health and the environment. See 42 U.S.C. § 9621(d)(1). U.S. EPA determines whether a remedy is protective by applying the standards outlined in the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., (CERCLA), and the National Contingency Plan, 40 C.F.R. Part 300, (NCP).

The NCP creates an analytical framework pursuant to which U.S. EPA must evaluate remedial alternatives against nine "balancing criteria". The requirement that remedies be protective of human health and the environment is singled out as the most fundamental of the nine criteria. "[T]he over-arching mandate of the Superfund Program is to protect human health and the environment from the current and potential threats posed by uncontrolled hazardous waste sites." 55 Fed. Reg. 8725 (March 8, 1990). However, the NCP recognizes that the "protectiveness" standard must be flexible enough to analyze diverse site conditions and allow consideration of a wide range of relevant factors. Accordingly, rather than impose rigid technical requirements, Section 300.430(e)(9)(iii)(A) of the NCP provides:

> Alternatives shall be assessed to determine whether they can adequately protect human health and the environment, in both

the short-term and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals consistent with § 300.430(e)(2)(i). Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

Further information regarding the manner in which U.S. EPA determines whether a remedy is "protective" is presented in Chapter 6 of Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01. A copy of this guidance is available in the Administrative Record.

CERCLA and the NCP also provide a mechanism for developing cleanup standards for Superfund actions. These standards are not provided in the Consent Agreement because they must be developed upon site-specific information uncovered during the Remedial Investigation. In accordance with the requirements of the NCP, cleanup levels are primarily set using health-based applicable or relevant and appropriate requirements (ARARs). ARARs consist of substantive environmental laws which either address specific circumstances at the site, or which address circumstances similar to those at the site. However, as the commentor points out, health-based ARARs are not always available, and alone they may not be sufficiently protective where there is a cumulative effect from multiple contaminants or multiple exposure pathways. In such circumstances, U.S. EPA will set cleanup levels for non-carcinogenic chemicals so that exposure to those chemicals presents "no appreciable risk of significant adverse effects to individuals, based on comparison of exposures to the concentration associated with reliable toxicity information such as EPA's reference doses." 55 Fed. Reg. 8712 (March 8, 1990). When an ARAR does not exist, or is not sufficiently protective for carcinogens, U.S. EPA is instructed to select a remedy which "falls within a proposed range of 10^{-4} to 10^{-6} incremental individual cancer risk." 55 Fed. Reg. 8712 (March 8, 1990). This range will be based upon reliable cancer potency information, such as U.S. EPA's cancer potency factors. Finally, cleanup levels for ecological and environmental effects will be set by U.S. EPA based upon environmental ARARs, where they exist, and levels which are protective of the environment, as determined on a site-specific basis.

(2) Page 37 of the Consent Agreement provides that the State of Ohio must identify potential ARARs within thirty (30) days of the request. Is the State ready to comply, and who will be in charge?

U.S. EPA RESPONSE:

Pursuant to CERCLA, all remedial actions must comply with any applicable or relevant and appropriate State requirement (State ARAR) which is more stringent than the Federal ARARs. The NCP instructs U.S. EPA and the State to discuss potential ARARs throughout the Remedial Investigation and Feasibility Study (RI/FS) process. However, to ensure that State requirements are communicated in time to be evaluated in the Feasibility Study, Section 300.515(h)(2) of the NCP requires the State to provide a list of potential ARARs within thirty (30) days of receipt of a written request from U.S. EPA.

Generally, the Project Manager for the Ohio Environmental Protection Agency (OEPA) and the OEPA legal staff have identified potential State ARARs. The State's participation in this, and all, aspects of the remedial process has been timely and instructive. U.S. EPA will continue working with OEPA to ensure that the requirements of CERCLA and the NCP are satisfied.

(3) What are the "future use scenarios" referenced on Page 39 of the Consent Agreement?

U.S. EPA RESPONSE:

The term "future use scenario" used on Page 39 of the Consent Agreement refers to an important aspect of the Baseline Risk Assessment. The Baseline Risk Assessment is conducted to determine whether the risk presented by the site requires remediation, and, if so, to target risk-based cleanup levels which will be protective of human health and the environment. The Baseline Risk Assessment accomplishes these tasks, in part, by conducting an "exposure assessment" which identifies the magnitude, frequency and duration of human or environmental exposure to contaminants found at the site. This assessment looks not only at threats posed by <u>current</u> land use conditions, but also analyzes potential threats under <u>future</u> land use conditions, assuming that no cleanup occurs at the site. Accordingly, the "future use scenario" discussed on Page 39 refers to U.S. DOE's obligation to evaluate the potential threats which contaminants at the Fernald Site might pose if land use at the site changes in the future. The results of this evaluation will be used to help develop cleanup levels which adequately protect against such threats.

(4) Whenever there is a public-comment period, a public meeting should be scheduled to explain and discuss the contents of the documents. That way the community will be able to make better informed comments on the document.

U.S. EPA RESPONSE:

U.S. EPA agrees. To date the Agency has consistently held public meetings during all public-comment periods to both explain the content of any new documents and to receive direct input from the community. U.S. EPA will continue this practice.

(5) The abbreviation RA is used in the document to stand for both "Risk Assessment" and "Remedial Action". A change needs to be made to clarify this.

U.S. EPA RESPONSE:

The 1990 Consent Agreement referred to both the risk assessment and the remedial action as the "RA". However, the amendments to the Consent Agreement avoid this confusion by referring to the risk assessment as the Baseline Risk Assessment. Baseline Risk Assessment is not abbreviated in the Amended Consent Agreement.

(6) Beyond the formal dispute resolution system, there needs to be additional communication between U.S. EPA and U.S. DOE. If U.S. EPA sees anything which could impact U.S. DOE's ability to meet scheduled deadlines, then U.S. EPA should send written notice to those involved and the U.S. DOE Site Manager. If the problem is not remedied, notice should be sent to U.S. DOE offices in Washington and should be placed in the Administrative Record. Every effort should be made to head off potential problems before they become actual problems.

U.S. EPA RESPONSE:

U.S. EPA shares the commentor's interest in ensuring compliance with all schedule deadlines and heading off potential problems. In general the Consent Agreement provides for a "bottom up" approach to problem solving. The U.S. EPA and U.S. DOE project managers are in daily contact and project manager meetings are held at least monthly as required by Section XII.E of the Consent Agreement. When the U.S. EPA discovers issues which might impact U.S. DOE's ability to meet schedule deadlines, the issues are discussed with U.S. DOE and often the U.S. EPA Project Manager sends written notice of the problem to U.S. DOE. However, U.S. EPA and U.S. DOE recognized that some issues cannot be resolved at the project manager level, and could benefit from direct and early intervention by U.S. EPA and U.S. DOE management. Accordingly, the

amendments to the Consent Agreement modify Section XIV to include an "early warning system". This Section provides that where circumstances arise which appear likely to result in formal dispute resolution, upper management at both U.S. EPA and U.S. DOE shall be contacted in writing as soon as practicable. Management shall then use its best efforts to resolve the issue, thereby avoiding the need for time consuming dispute resolution procedures. U.S. EPA is hopeful that this new provision will aid in the prompt resolution of any controversies.

(7) The amendments to the Consent Agreement state that insufficient qualified lab capacity is an acceptable excuse for delay. This has become a frequent issue at the Fernald Site; what are U.S. EPA and U.S. DOE doing to prevent this from becoming a problem in the future?

U.S. EPA RESPONSE:

First, U.S. EPA would like to clarify that pursuant to Section XVIII of the Consent Agreement, U.S. DOE must establish good cause for all schedule extensions. An extension will only be granted if U.S. DOE notifies U.S. EPA as soon as possible and establishes that despite its best efforts there is insufficient qualified lab capacity to process and analyze samples taken under the Agreement. U.S. DOE must also describe all steps which have been taken or will be taken to minimize any schedule impacts as a result of the capacity problem.

U.S. EPA and U.S. DOE included the reference to lab capacity in the Consent Agreement because both recognize the difficulties presented by this issue and wish to prevent corresponding schedule delays. Accordingly, U.S. DOE has contacted existing labs to ensure that such labs are prepared for the volume of sampling which will result from response actions required under the Consent Agreement. Additionally, U.S. DOE has requested that U.S. EPA audit two additional labs to allow for greater sampling capacity. Finally, in the event that there is insufficient capacity, U.S. DOE has agreed that its best efforts to provide lab capacity will include prioritizing its sampling needs such that reduced capacity will have minimal impact on the schedules.

(8) Section XXVII requires U.S. DOE to keep records for ten (10) years. Because the radioactive materials at Fernald stay radioactive for thousands of years, all of the major documents should be kept indefinitely. Should future generations need the information, it must be available without going through a new investigation process.

U.S. EPA RESPONSE:

First, U.S. EPA would like to clarify that Section XXVII requires U.S. DOE to retain all records for ten (10) years following the completion of response actions a the Fernald Site. This provision is based upon model language negotiated between U.S. EPA and U.S. DOE for inclusion in all Interagency Agreements under CERCLA Section 120. Additionally, Section XXVII does not override the Administrative Record requirements of Section XXXV.D. According to U.S. EPA policy, the Administrative Record will be transferred to micro-fiche and stored indefinitely, thus the most important documents will be preserved.

(9) The Technical Support Group referenced in Section XXVIII should include independent experts chosen to represent the interest of the community. Community groups like F.R.E.S.H. should be included in setting up the Technical Support Group and in working with the Group.

U.S. EPA RESPONSE:

The roles, functions, membership and charter of the Technical Support Group referenced in Section XXVIII have not yet been developed. U.S. EPA will keep the community apprised of developments in this area and provide for appropriate public participation in any proposals.

(10) U.S. EPA should have a final public-comment period before terminating the Agreement. Termination of the Agreement should include a list of recommendations on how the whole process worked and how it might be improved for future cleanups.

U.S. EPA RESPONSE:

U.S. EPA agrees with these suggestions. U.S. EPA intends to conduct a public-comment period and meeting prior to termination of the Consent Agreement. U.S. EPA further agrees that a list of recommendations would be useful and could help in improving future cleanups.

(11) If U.S. DOE requests changes in the Agreement or in the schedules because of the Five Year Plan, a public-comment period and meeting should be held immediately.

U.S. EPA RESPONSE:

It is U.S. EPA's intention that any major modification to the Consent Agreement, including a modification resulting from changes in U.S. DOE's Five Year Plan, cannot be finalized without adequate public participation. Such participation will include, as necessary, a public-comment period and a public meeting.

(12) The Force Majeure clause in Section XIX leaves too many loop holes and needs to be tightened up. Contractors' negligence could be used as an excuse for U.S. DOE.

U.S. EPA RESPONSE:

The Force Majeure provision in Section XIX is based upon model language negotiated between U.S. EPA and U.S. DOE for inclusion in all Interagency Agreements under CERCLA Section 120. U.S. EPA does not intend for this provision to be abused, and will carefully review any claims or requests for extension made pursuant to this Section.

(13) Any RI Report/Baseline Risk Assessment should not be limited to male whites in their twenties. It should consider living persons in the area such as children, women, and older men.

U.S. EPA RESPONSE:

U.S. DOE is obligated to perform the RI Report/Baseline Risk Assessment in accordance with CERCLA, the NCP and all applicable U.S. EPA guidance. U.S. EPA guidance expressly requires that the Baseline Risk Assessment identify "sensitive sub-populations" which might be affected by the contaminants at a site, including children, women of childbearing age, farmers, older people, etc. In keeping with this guidance, appropriate sub-populations will be targeted and evaluated in the Baseline Risk Assessments for the Fernald Site.

(14) Section XIV of the Consent Agreement creates a Dispute Resolution Committee and Senior Executive Committee to aid in the resolution of disputes. However, the Consent Agreement provides only the titles and not the names of the committee members; please provide those names.

U.S. EPA RESPONSE:

The dispute Resolution Committee consists of the U.S. EPA Region V Associate Director, Waste Management Division, William Muno, and the U.S. DOE Fernald Office Manager, Robert Tiller. The Senior Executive Committee consists of the U.S. EPA Region V Regional Administrator, Valdas Adamkus, and the U.S. DOE Associate Director of Environmental Restoration, R. Patrick Whitfield.

(15) The Conservation District of Hamilton County would like to offer assistance on seeding recommendations for erosion control and storm water management.

U.S. EPA RESPONSE:

U.S. EPA welcomes any comments or suggestions that the Conservation District may have.

(16) A comment was raised regarding the large amount of noise generated by activities at the site.

U.S. EPA RESPONSE:

Although this is not part of the Consent Agreement, U.S. EPA has notified U.S. DOE regarding noise pollution at the site, and has recommended U.S. DOE take action to reduce the noise.

(17) Why not implement expedited cleanup actions at the Fernald Site for Operable Unit (OU) 1 so that contamination of the aquifer can be arrested as soon as possible. Material from the waste pits can be removed and stored in containers above ground while studies of treatability continue.

U.S. EPA RESPONSE:

U.S. DOE is implementing expedited removal actions in OU 1. The removal action to capture storm water that may be contaminated from the waste pit area is about 40 percent complete with activities expected to be completed in the summer of 1992.

The CERCLA process requires completion of an Remedial Investigation/Feasibility Study and publication of a Record of Decision (ROD) before the final remedy is implemented. Although

excavating the waste pits may be an appropriate final solution, other alternatives are being considered. Information gathered from the RI and treatability studies will be used in selecting an appropriate remedy. However, a removal action may be appropriate to remove certain portions of waste materials from the waste pits if it is determined that the specific area may be a source of ground water contamination.

(18) All four Removal actions approved by U.S. EPA have as their final disposal the dumping of uranium by-products, and hazardous waste into the Great Miami River. "...All removal actions must be consistent with any planned longer-term remedial actions..." Does this mean that the long term remedial action is to cleanup Fernald by slowly washing hazardous waste downstream? The Great Miami River should be identified in OU 6 and this Unit given the highest priority. We should not allow the continued water pollution, justifying it as at or below production levels. Those levels were unacceptable then and now.

U.S. EPA RESPONSE:

Any contamination entering the Great Miami River will be addressed in Operable Unit 5 and the Site-Wide Comprehensive Operable Unit. However, contaminants are not being transferred from one area at the site and disposed into the Great Miami River. It is U.S. EPA's goal to reduce Uranium discharge to the Great Miami River. In October 1990, U.S. DOE, OEPA, and U.S. EPA negotiated a uranium level of 1700 pounds per year as a target level to be discharged to the river. The discharge is not to exceed this level. As the cleanup and removal actions proceed the amount of uranium discharged to the river will decrease, as more uranium is treated and stored on site. Also as the advanced waste water treatment system is enlarged additional uranium will be treated on-site as part of final remediation.

(19) The concept of a site-wide OU is excellent; however, the plans to implement this OU are not clear. If a single OU is going to be developed then why will the existing OUs continue to have documentation prepared and submitted as shown on the schedule?

U.S. EPA RESPONSE:

The Comprehensive Site-Wide Operable Unit was developed as a "catch-all" to ensure that all response actions have taken into account the risk presented by the entire site. If the selected removal and remedial actions ensure that the site as a whole is protective of human health and the environment, then the ROD for

the Site-Wide OU will be "no action". Therefore, RI/FSs must be conducted for each OU to determine the appropriate remedy. After this process has been completed, then the Comprehensive Site-Wide Operable Unit will be developed.

(20) If a Site-Wide Characterization Report (SWCR) is to be submitted to U.S. EPA on 8/5/92, then what is the purpose of submitting RIs for each of the existing OUs after this date?

U.S. EPA RESPONSE:

The purpose of the SWCR is to present a Site-Wide baseline risk assessment and to recommend the leading remedial alternatives, based upon information known at this time. The baseline risk assessment will be used as a reference to demonstrate the effectiveness of remedial actions at the site as a whole. However, individual RIs for each OU are still required since much information is still unknown in some OUs. The purpose of the RI is to summarize the data gathered to be used in the FS to select a remedy. Although the SWCR recommends the leading alternatives based upon best technical judgment, it is not until the FS, when various alternatives are evaluated against U.S. EPA selection criteria, that the remedy is proposed.

(21) Baseline Risk Assessments have already been submitted to the U.S. EPA as part of the draft RIs for OUs 1, 2, and 4. Is it the intent of the preliminary assessment in the SWCR to update, repeat or expand on these Baseline Risk Assessments?

U.S. EPA RESPONSE:

The baseline risk assessment in the SWCR will repeat little information from the Draft RIs for OUs 1, 2, and 4. The previous RIs did not include adequate risk information. Thus, the SWCR will primarily update and expand information to conform to U.S. EPA guidance, and will also incorporate information from OUs 3 and 5.

(22) Why does a FS/Comprehensive Response Action Risk Evaluation need to be prepared for each OU if the SWCR is going to prepare a preliminary assessment and identify a Leading Remedial Alternative? Shouldn't the risks associated with each alternative be evaluated before a recommendation is made?

U.S. EPA RESPONSE:

The Leading Remedial Alternatives, identified in the SWCR, are best estimates given the information available at this time. They are not a pre-selection of remedy. Each OU still requires a FS/Comprehensive Response Action Risk Evaluation to be completed

since more information will be available after the RI for the specific OU is completed. Also other removal actions may have been completed, which may need to be considered during the risk assessment. Regardless, all risks associated with each alternative, considered in the FS, for each OU will be evaluated before any remedy is selected.

(23) If the Site-Wide FS is going to include an Initial Screening of Alternatives, then what is the purpose of the ISA for OU3 that is scheduled for 3/28/95?

U.S. EPA RESPONSE:

The ISA for OU 3 will look at alternatives that may be potential remedies for OU 3. The Site-Wide ISA, will be conducted after the selection of remedies for OUs 1-5. Moreover, if the previously selected response actions are protective of human health and the environment, then a Site-Wide ISA will not be necessary, since the "no action" alternative may be most appropriate. However, if after the completion of the ROD for the last Operable Unit it is determined that the risk resulting from the sum of all remedies selected is not protective, a Site-Wide ISA will be completed along with a FS.

(24) If a Site-Wide Proposed Plan (PP) is going to be prepared, then what is the purpose of the FS/PP for each OU that are shown on the schedule?

U.S. EPA RESPONSE:

Each OU will have a FS/PP completed as required by the CERCLA process to select a remedy based upon U.S. EPA's selection criteria. The proposed remedy will then be available for public-comment before becoming final. If all remedies selected for each OU are deemed by U.S. EPA to be protective of human health and the environment, the Site-Wide FS/PP will recommend a "no action" alternative. The purpose of the Site-Wide Operable Unit is to take a final look at remedies selected for the Fernald Site and if any changes are necessary complete them within the CERCLA process.

(25) In general the schedule of remediation activities appears excessively long for the following reasons:

a) Given the fact that RI/FS work has been ongoing for several years and draft RI/FS documents have already been submitted to the U.S. EPA for several of the OUs, I do not believe it should take between 10 and 29 months to complete the RIs for OUs 1, 2, 3, and 4 and 54 months for OU3. At many other Superfund sites the entire RI takes a fraction of this time and involves significantly more

hazardous chemicals. 2825

For example, the draft RI was submitted in the fall of 1990 and additional samples were recently removed from the silos in this OU. To spend another 18 months analyzing this new information and updating the RI is not justifiable.

U.S. EPA RESPONSE:

The RI/FS documents submitted in the past were deemed by U.S. EPA to be inadequate and resulted in the dispute resolution and ultimate assessment of penalties against U.S. DOE. As part of the dispute resolution settlement signed on May 13, 1991, both parties agreed to renegotiate the Consent Agreement schedules since it did not appear possible for U.S. DOE to submit quality documents given the existing deadlines. Although the revised schedules may appear lengthy at first glance, U.S. EPA, U.S. DOE, and OEPA analyzed detailed schedules to determine the ultimate submittal time for all documents.

In the case of OU 4, K-65 Silos, the earlier RI submitted was inadequate and a new RI must be generated. The laboratory analysis from all samples will be available by February 1992 and the RI Report is due to U.S. EPA in April 1993. The RI Report also includes a Baseline Risk Assessment. U.S. EPA has recently received the Risk Assessment work plan, and it has not yet been approved. Once this work plan is approved the baseline risk assessment can then be developed based on data in the RI and incorporated into the report.

Finally, although the Fernald Site may not have a relatively large a number of hazardous chemicals, as compared to some Superfund sites, the radionuclides at the Site make handling the chemicals difficult from a health and safety standpoint. Also, the radionuclides limit disposal options considerably in comparison with other chemicals.

b) **Taking until 3/28/95 to prepare an Initial Screening of Alternatives is ludicrous. There is a tremendous amount of information available about what activities occurred in each of the buildings at the site and the potential lists of treatment alternatives for structures that are contaminated with naturally occurring radionuclides, asbestos, and process chemicals is fairly straightforward and involves many proven technologies.**

The entire cleanup of the Allied Chemical plant in Baltimore under a RCRA consent decree is taking less time the preparation of the ISA for OU 3. This plan covered

about 10 acres, included over 20 buildings, and was heavily contaminated with heavy metals (chromium) which required similar dismantling, decontamination, personnel and environmental protection techniques as will be required at Fernald.

U.S. EPA RESPONSE:

Although it may appear that much is known regarding the wastes in each of the buildings in the production area, this is not the case. The Amended Consent Agreement changed the scope of OU 3 to include the actual buildings and materials in the production area. Therefore, U.S. DOE is still in the work plan development stage, determining the scope of the problem in OU 3. This includes decontamination and dismantling with accompanied storage of the various materials in the production area. Once the scope of activities in OU 3 is further developed, the work on the ISA for OU 3 will begin. Thus U.S. DOE will not be working on the ISA for OU 3 from now until 3/28/95. Once again, the presence of radionuclides and asbestos require specific health and safety procedures, and limit disposal options.

(26) **The decisions to perform several of the identified Removal Actions seem premature. It is my understanding a Removal Site Evaluation (RSE) must be performed to determine if a Removal Action is needed. Since RSEs have not been performed for Removals 14 through 18, I do not understand how the actions can be planned. Please explain this apparent inconsistency between the requirements of CERCLA and the schedule.**

U.S. EPA RESPONSE:

U.S. EPA agrees that RSEs must be performed. U.S. DOE is required, pursuant to section 40 CFR 300.410 of the NCP, to determine the appropriateness of a removal action. RSEs are conducted for each removal action and are submitted to U.S. EPA. All RSEs will be available in the administrative record when they are completed.

(27) **I am not convinced yet that the sampling procedure described on page 82 of the Consent Agreement is adequate to characterize the material and the risks from the same. (Also submitted along with this comment was a paper entitled "Inequilibrium-Induced Misleading Readings."**

U.S. EPA RESPONSE:

The question raised deals with sampling procedures. However, Section XXVI, which is found on page 82, concerns sampling and data/document availability, and does not specifically address

sampling procedures. Section XXVI has two parts: Part A establishes a deadline of 15 days to report test results to the U.S. EPA once they are received by U.S. DOE; and Part B establishes a ten day advance notice period for any sampling so that U.S. EPA can take their own samples or split samples with U.S. DOE.

However, the commentor should be aware that his concerns regarding appropriate sampling procedures will be addressed when documents for specific actions are submitted by U.S. DOE to U.S. EPA for review or concurrence. Documents involving sampling procedures, instrument usage, quality assurance procedures, etc. are be subject to review before field work begins. Documents involving data interpretation, including judgments on equilibrium and health impacts, are reviewed once data has been collected.

As a point of clarification regarding the paper submitted by the commentor, equilibrium is not measured by field instruments but is determined by looking at the activities (decay rates) of each radionuclide in a decay series. Such activities are generally measured in a laboratory. If the activities for each radionuclide in a sequence of radioactive decays were numerically equal, then that sequence would be said to be in equilibrium. For example, if thorium-232, radium-228, actinium-228 and thorium-228 in the Thorium Decay Series were found to have activities of 20, 20, 20, and 20 picocuries per gram, respectively, then they would be in equilibrium. If the activities were 30, 26, 40, and 14 picocuries per gram, respectively, then they would not be in equilibrium.